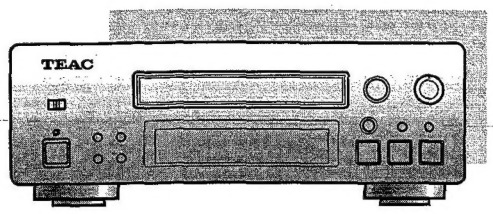
TEAC



SERVICE MANUAL

R-H500

Cassette Deck

NOTES

- PC boards shown are viewed from parts side.
- The parts with no reference number or no parts number in the exploded views are not supplied.
- As regards the resistors and capacitors, refer to the circuit diagrams contained in this manual.
- ⚠ Parts marked with this sign are safety critical components.
  They must be replaced with identical components- refer to the appropriate parts list and ensure exact replacement.
- Parts of [ ] mark can be used only with the version designated.
  [DM]: JAPAN [E]: EUROPE

CONTENTS

Specifications

DECK (for recording/playing)

- Track system : 4 track, 2-channel stereo
- Recording system : AC bias
- Erasing system : AC erasing
- Tape speed : 4.8cm/sec
- Motor : DC motor
- Ferquency response
  - Normal : 40~14,000Hz
  - CrO_2 : 40~15,000Hz
  - Metal : 40~16,000Hz
- FF and REW time : 120 seconds (*C-60 cassette tape*)
- Wow/Flutter : 0.15% (JIS, WRMS)
- S/N ratio
  - Dolby NR OFF : 55dB (CCIR/ARM)
  - Dolby B NR ON : 65dB (CCIR/ARM)
  - Dolby C NR ON : 75dB (CCIR/ARM)
- Input sensitivity / Impedance
  Line : 90mV / 35Kohms
- Output level / Impedance
  Line : 548mV / 1Kohms

General

- Power consumption : 9W [DM]
  : 12W [EUR]
- Power requirements : 100V, 50Hz [DM]
  : 230V, 50Hz [EUR]
- Dimension (W×H×D) : 285×101×304mm
- Weihgt : 4.1Kg

Standard accessories

Audio signal connection cable : 2
Remote control connection cable : 1

* Improvements may result in specification or feature changes without notice.

MEASUREMENT AND ADJUSTMENT METHODS

Measurement condition

- Dolby NR position: OFF
- Make sure heads are clean
- Make sure capstan and pressure roller are clean.

Measuring instruments

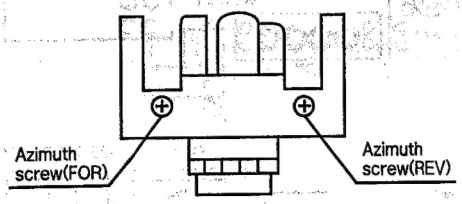
- EVM (Electronic Voltmeter)
- Oscilloscope
- Frequency counter
- AF Oscillator
- DC Voltmeter
- ATT (Attenuator or Audio Generator)
- Resistor (600ohm)

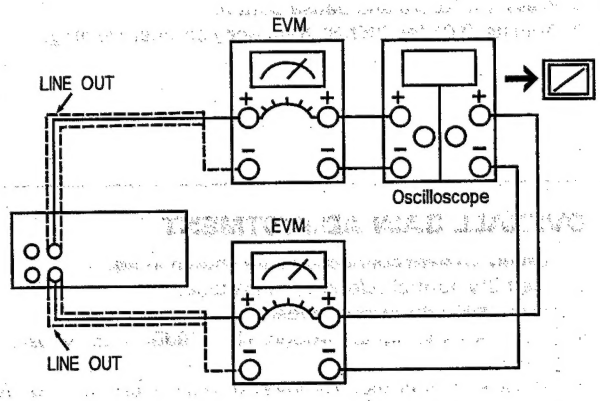
Test tape

- Head azimuth (10KHz, -10dB): MTT-114N
- Tape speed (3KHz, -10dB): MTT-111N
- Playback frequency response MTT-257H (125KHz, 1KHz, 10KHz, -10dB)
- Playback gain: MTT-150
- Blank tape
  Normal blank tape: MTT-5511
  CrO_2 back tape: MTT-5561
  Metal back tape: MTT-5571

HEAD AZIMUTH ADJUSTMENT

1. Test equipment connections are shown in fig. 1.
2. Playback the head Azimuth test tape and regulate the angle adjust screw so that the outputs of L-ch and R-ch are maximized. (When the adjusting positions are differene with L-ch and R-ch find a position Where the outputs of L-ch and R-ch are balanced and then make the adjustment.)
3. At the same time, obtain a lissajous waveform and eliminate phase deflection.
4. After the adjustment, apply screw lock to the angle adjusting value.



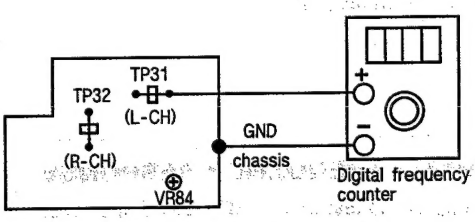


(Fig 1)

TAPE SPEED ADJUSTMENT

1. Test equipment connections are shown in fig. 2.
2. Playback the middle part of the test tape.

Adjustment Point	VR84
Standard Value	3,000Hz ± 30Hz

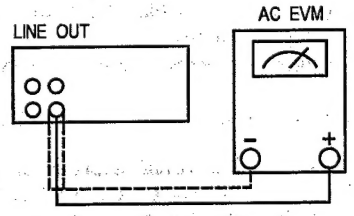


(Fig 2)

PLAYBACK GAIN ADJUSTMENT

1. Test equipment connections are shown in fig. 3.
2. Playback the playback gain test tape. (MTT-150).
3. Adjust plyback gain.

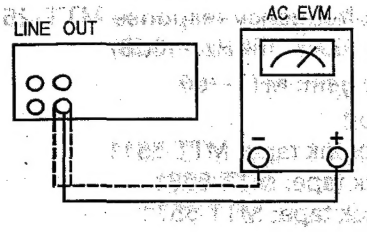
Adjustment Point	L ch	R ch
DECK	VR01	VR02
Standard Value	540mV	



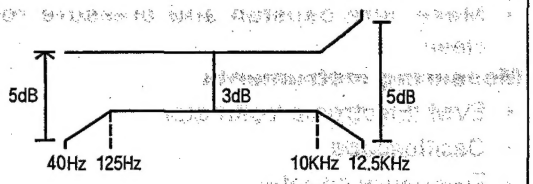
(Fig 3)

PLAYBCK FREQUENCY RESPONSE

1. Test equipment connections are shown in fig. 4.
2. Playback the playback frequency response test tape.
3. Check shown in fig. 5 for both L-ch and R-ch.



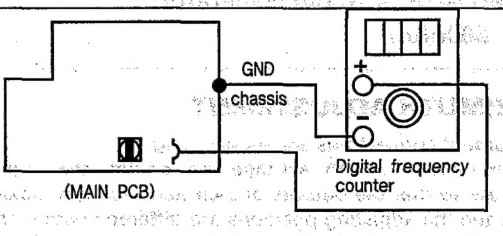
(Fig 4)



(Fig 5)

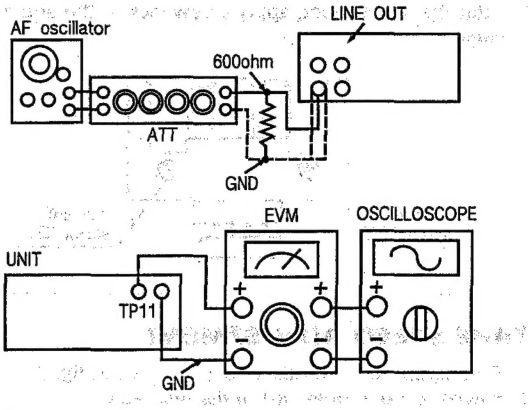
BIAS FREQUENCY ADJUSTMENT

1. Test equipment connections are shown in fig. 6.
2. Load a CrO_2 blank test tape.
3. Press the record and pause button.
4. Adjusts T501 for 105KHz frequency counter reading.



OVERALL GAIN ADJUSTMENT

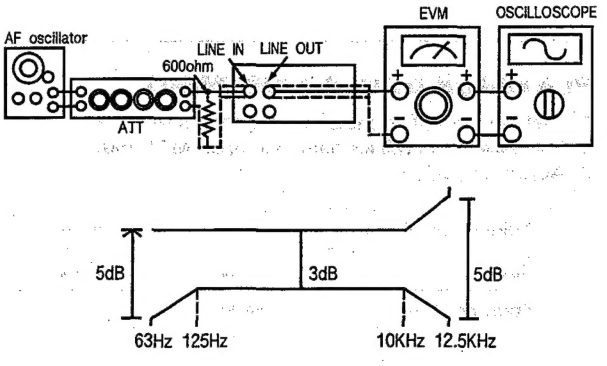
1. Test equipment connections are shown in fig. 7.
2. Insert the normal reference blank tape.
3. Place UNIT into record mode.
4. Supply a 1KHz signal through ATT (-10dB) from AF oscillator to line in.
5. Adjust ATT until monitor level at TP31 (L-ch) or TP32 (R-ch) becomes 180mV.
6. Playback recorded tape and make sure that the output level at TP31 (L-ch) or TP32 (R-ch) becomes 180mV.
7. If measured value is not 180mV, adjust it by using VR31 (L-CH) or VR32 (R-CH).
8. Repeat from step (2).



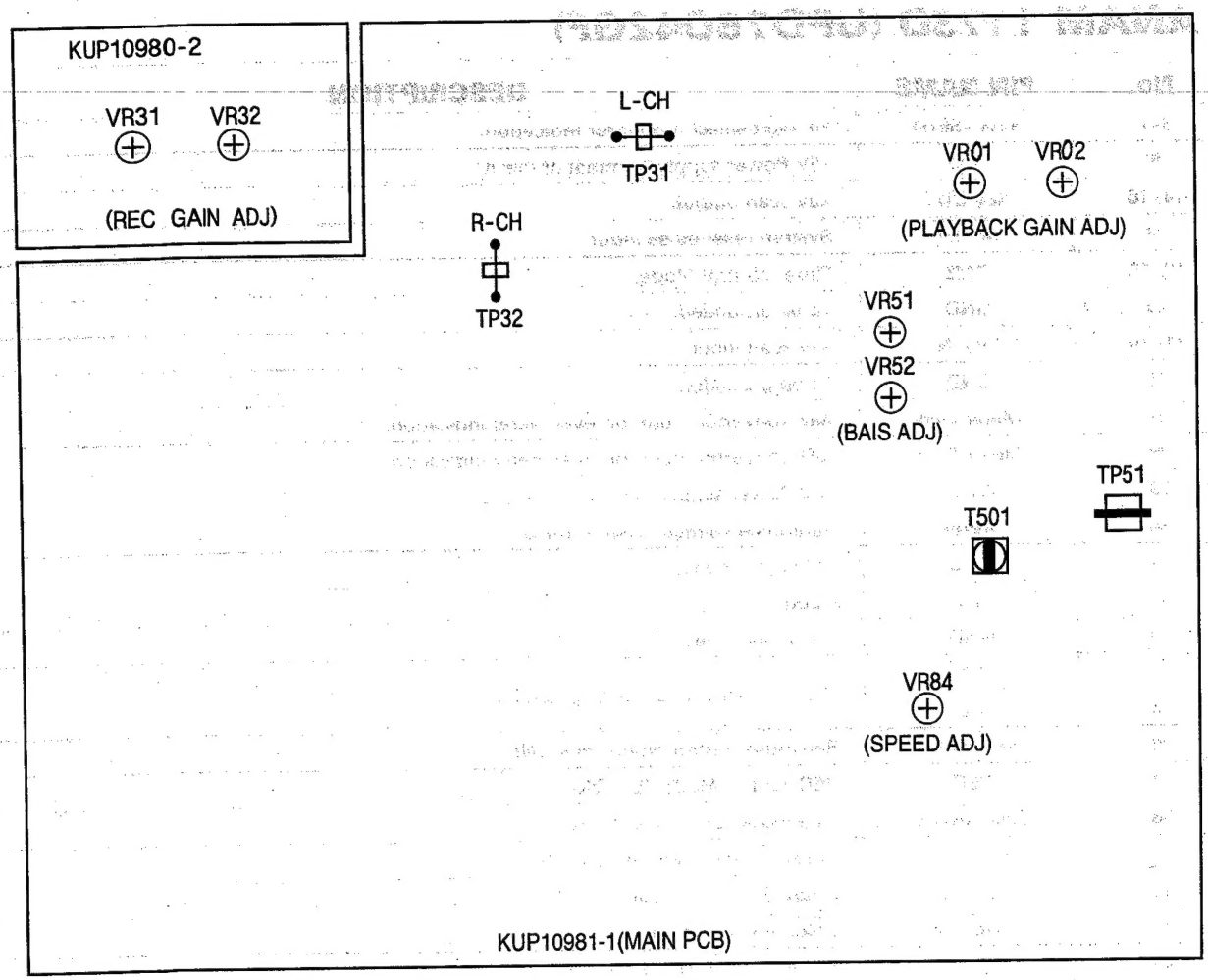
(Fig. 7)

OVERALL FREQUENCY RESPONSE

1. Set a normal blank tape (MTT-5511) and record by apply signal (100Hz, 1KHz, 10KHz) through ATT-from AF oscillator to lins in (Line out Level: 33mV).
2. Playback the signal recorded in step 1, and check that the level of each output frequency in within the range shown in fig. 8 in comparison with the reference frequency (1KHz).
3. If it is not within the standard range adjust the bias current by using VR51 (L-CH) or VR52 (R-CH) so that the frequency level is within the standard.
   - Level up in high frequency range ... Increase the bias current.
   - Level down in high frequency range ... Decrease the bias current.
4. After that, increase the signal recorded on CrO_2 blank tape (MTT-5561) and metal blank tape (MTT-5571) up to 12KHz and adjust in the same way as mentioned above and check that frequency level is within the range shown in Fig. 8.



(Fig. 8)


KUP10980-2
VR31
VR32
(REC GAIN ADJ)
L-CH
TP31
R-CH
TP32
VR01
VR02
(PLAYBACK GAIN ADJ)
VR51
VR52
(BAIS ADJ)
TP51
T501
VR84
(SPEED ADJ)
KUP10981-1(MAIN PCB)

MICRO-COMPUTER'S TERMINAL FUNCTION

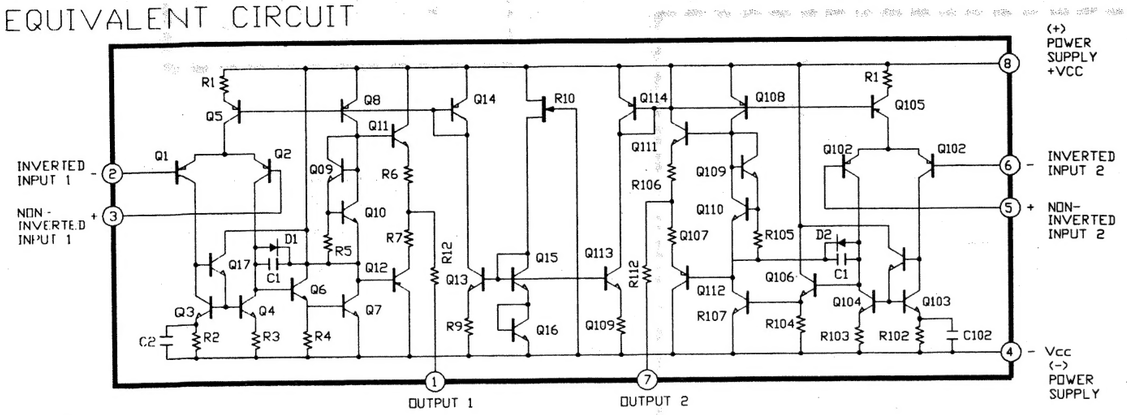
• ANAM 1173D (UPD78042GF)

No.	PIN NAME	DESCRIPTION
3~7	SEG ~SEG1	FIP digit select output for indication.
8	VDD	+5V Power supply terminal of this IC.
14~16	Key OUT	Key scan output.
17	$\overline{\text{RESET}}$	System reset pulse input.
18~19	TIME	Timer control Mode.
20	GND	To be grounded.
21~24	Key IN	Key scan input.
25	GND	To be grounded.
27	Meter L-ch	A/D Convertor input for level meter indication.
28	Meter R-ch	A/D Convertor input for level meter indication.
29	AVDD	+5V Power supply terminal of this IC.
30	AVref	Reference voltage input terminal.
31	GND	To be grounded.
32	XT2	Open
33	GND	To be grounded.
34	X1	Crystal element connecting terminal.
35	X2	
36	Key Mute	Rec mute control Mode (H = ON)
37	$\overline{\text{REC}}$	$\overline{\text{REC}}$ control Mode (L = ON)
38	LINE MUTE	Line mute control Mode (H = ON)
40	Dolby $\overline{\text{C}}$	Dolby $\overline{\text{C}}$ control Mode (L = ON)
41	Dolby $\overline{\text{B}}$	Dolby $\overline{\text{B}}$ control Mode (L = ON)
42	$\overline{\text{LINE}}$ / PB	$\overline{\text{LINE}}$ / PB control Mide
43	POWER	Power control Mode (H = ON)
44	GND	To be grounded.
45	T.P.S	T.P.S data input.
46	Hall	Hall IC data input.
47	Remocon IN	Remocon data input.
48	GND	To be grounded.
49	Remocon OUT	Remocon data output.
50	Close Motor	Close loading Motor control (H = ON)
51	Open Motor	open loading Motor control (H = ON)
52	VDD	+5V power supply terminal of this IC.
53	Close SW	Loading close detector sw input (L = ON).
54	Open SW	Loading open detector sw input (L = ON).
55	Rec (R) SW	Rec (Reverse) SW detector input.
56	Mode SW	Mode sw detector input.
57	TAPE SW	TAPE sw detector input.
58	Motor	Motor control output (H = ON)
59	Solenoid	Solenoid control output (H = ON)
60	Rec (F) SW	Rec (torward) sw detector input.
61~70	Seg1~Seg10	Fip segment control output.
71	V Load	(-24V) Negative power supply input terminal for fip blanking.
72~77	Seg11~Seg16	Fip segment control output.

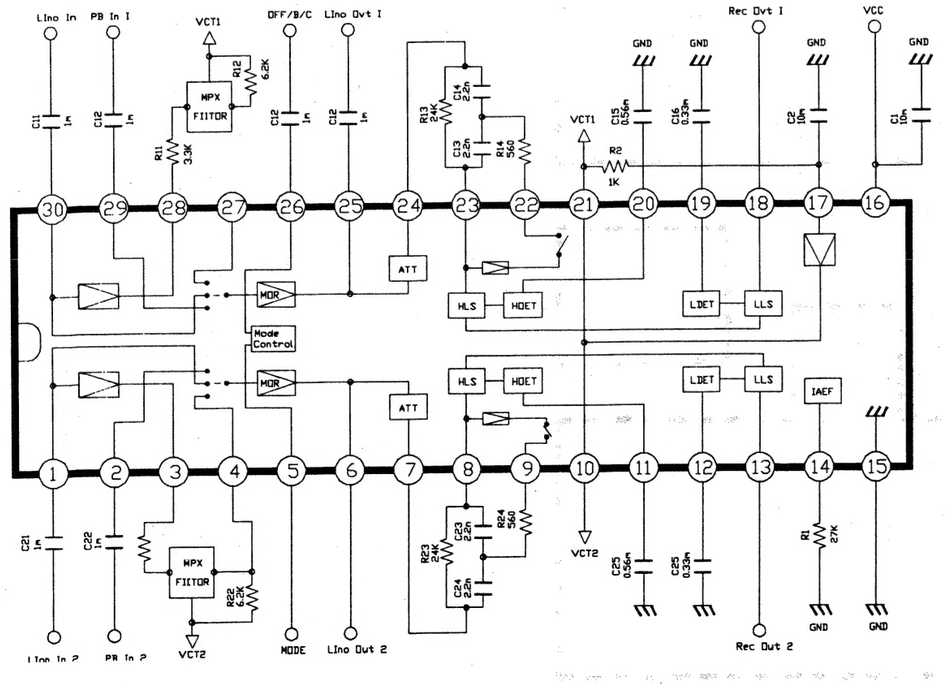
M5220P

(DUAL LOW-Noise Operational Amplifiers (DUAL POWER SUPPLY TYPE)

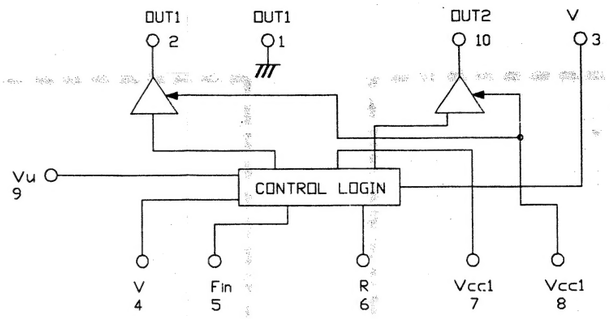
EQUIVALENT CIRCUIT



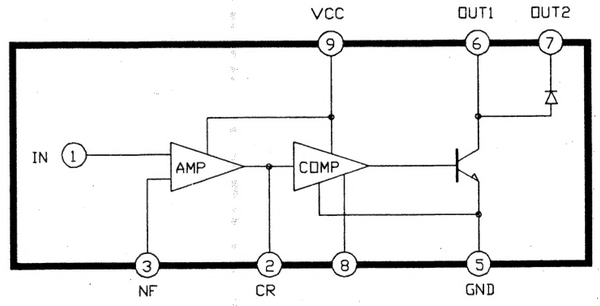
CXA1331S (DOLBY B. C Noise Reduction System)



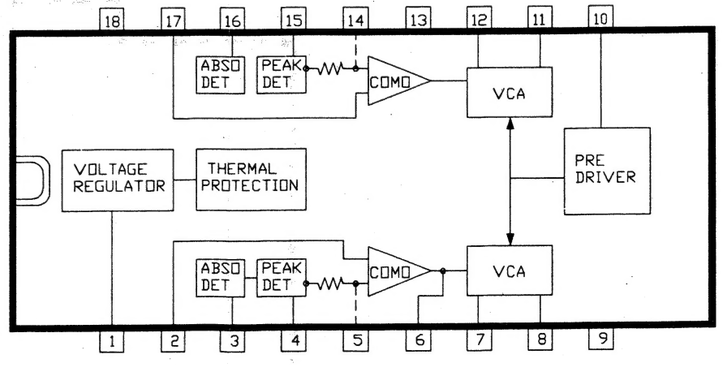
BA6209(Reversible Motor Driver)



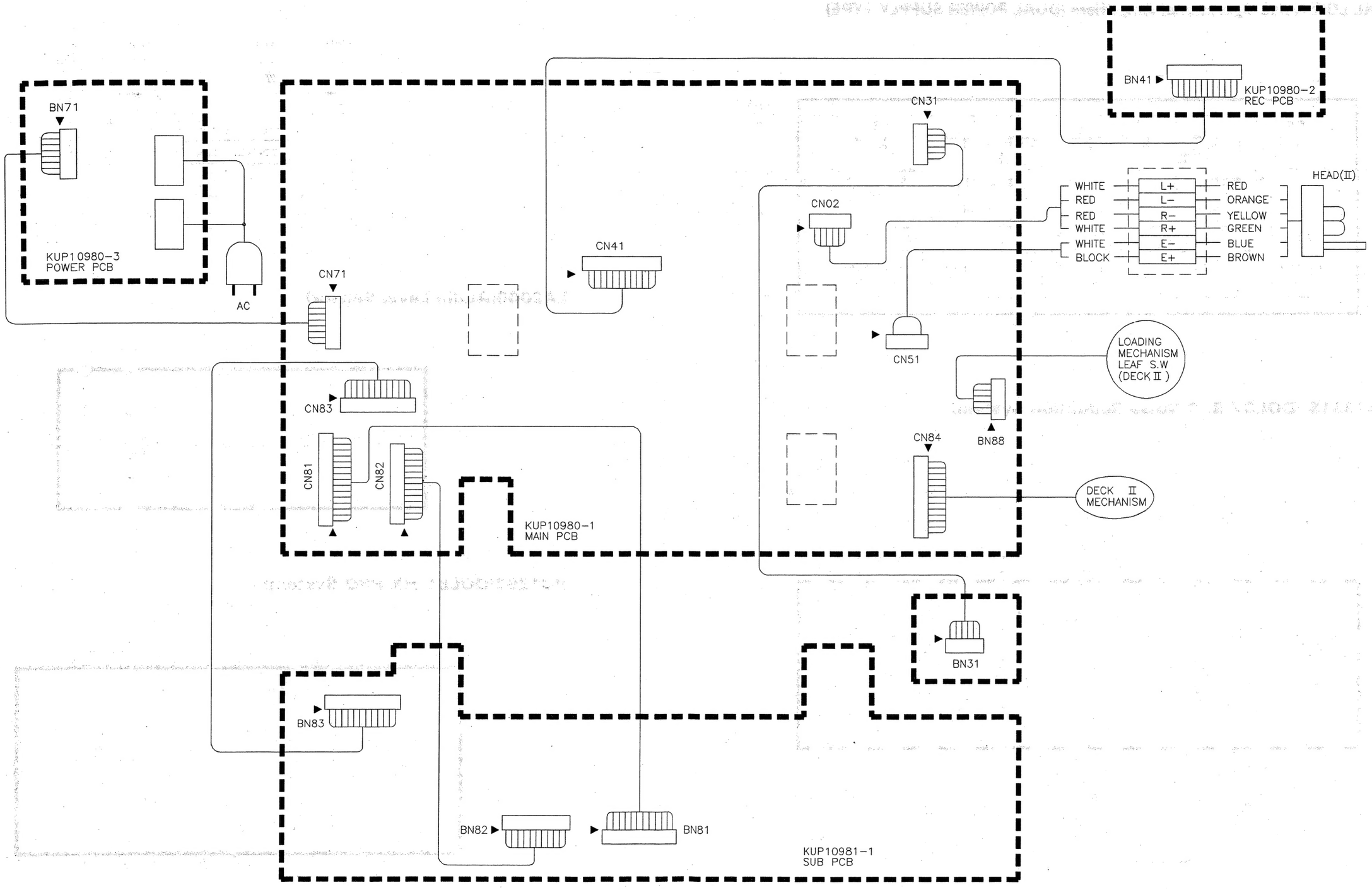
LA2000(Audio Level Sensor)



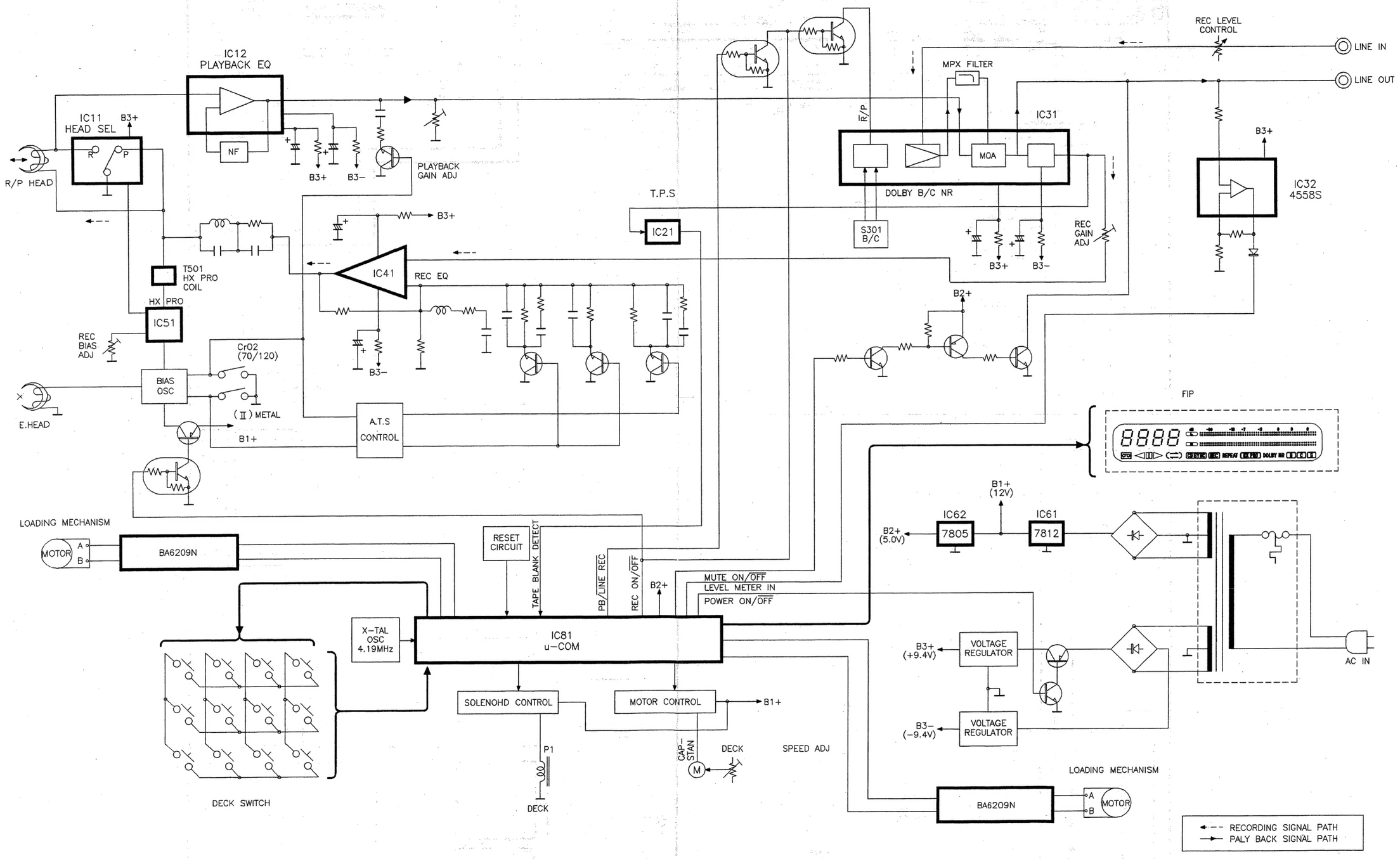
PC1297(DOLBY HX PRO System)



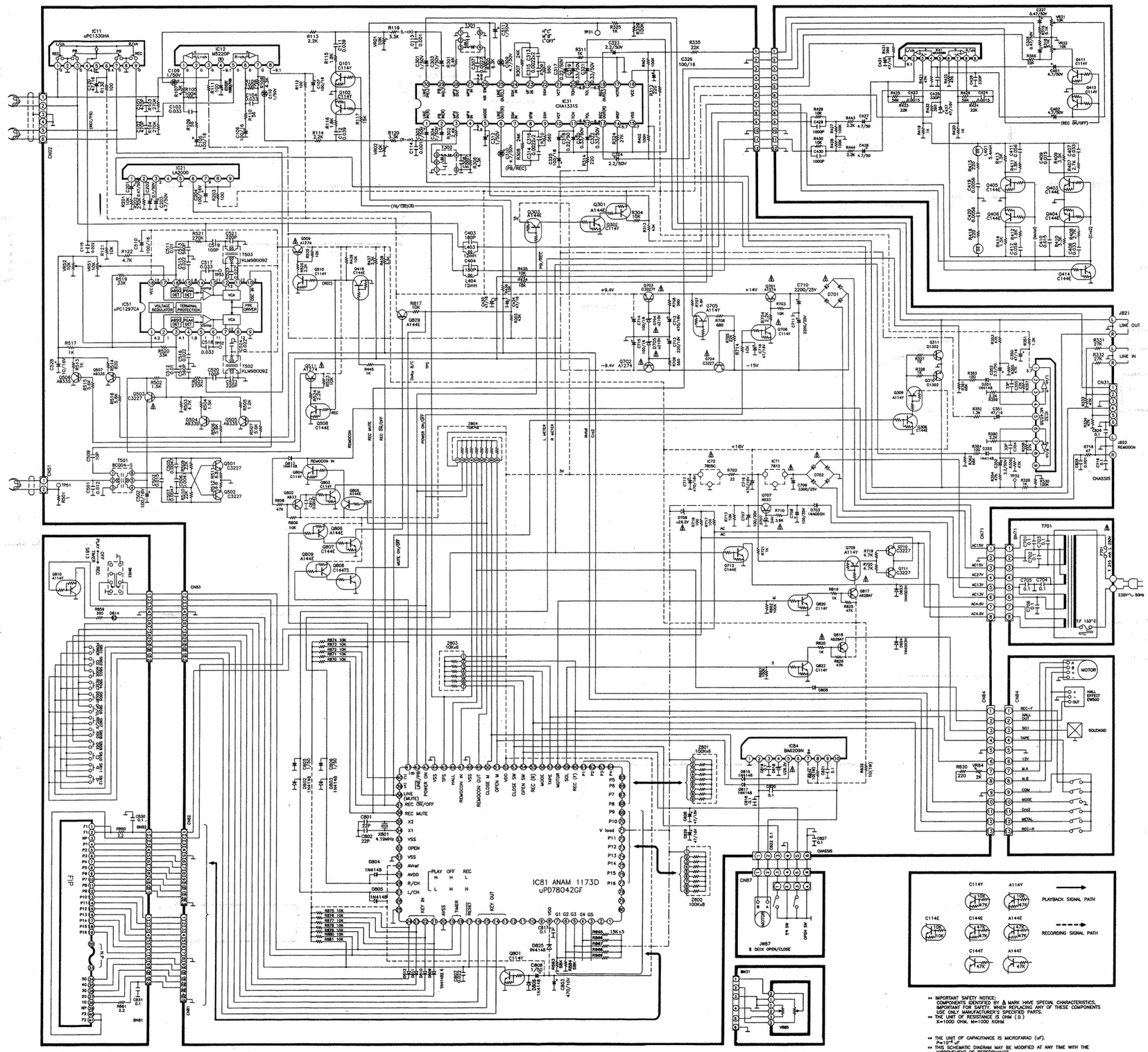
WIRING DIAGRAM



BLOCK DIAGRAM



SCHEMATIC DIAGRAM



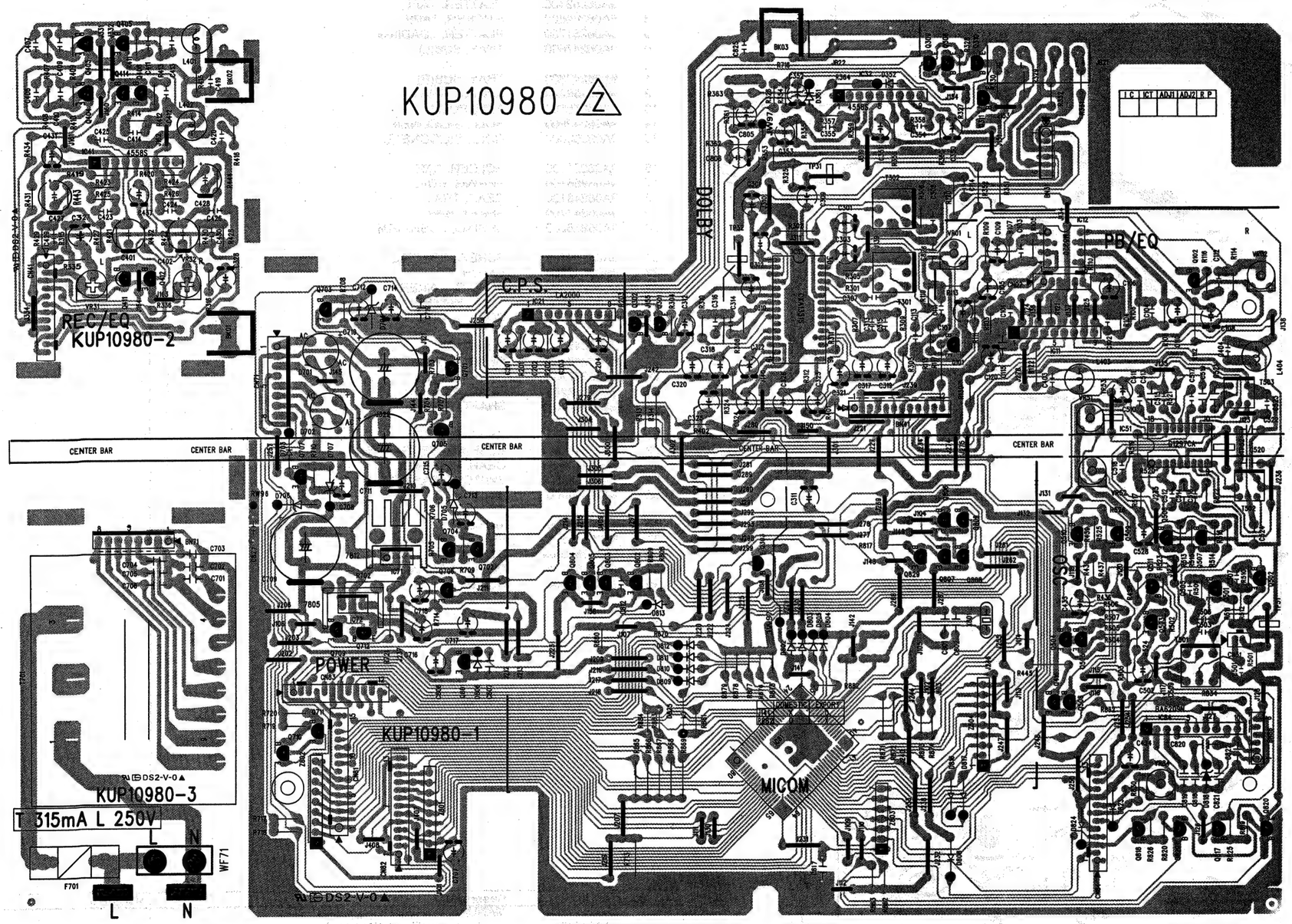
** IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY ⚠ MARK HAVE SPECIAL CHARACTERISTICS, IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS USE ONLY MANUFACTURER'S SPECIFIED PARTS.

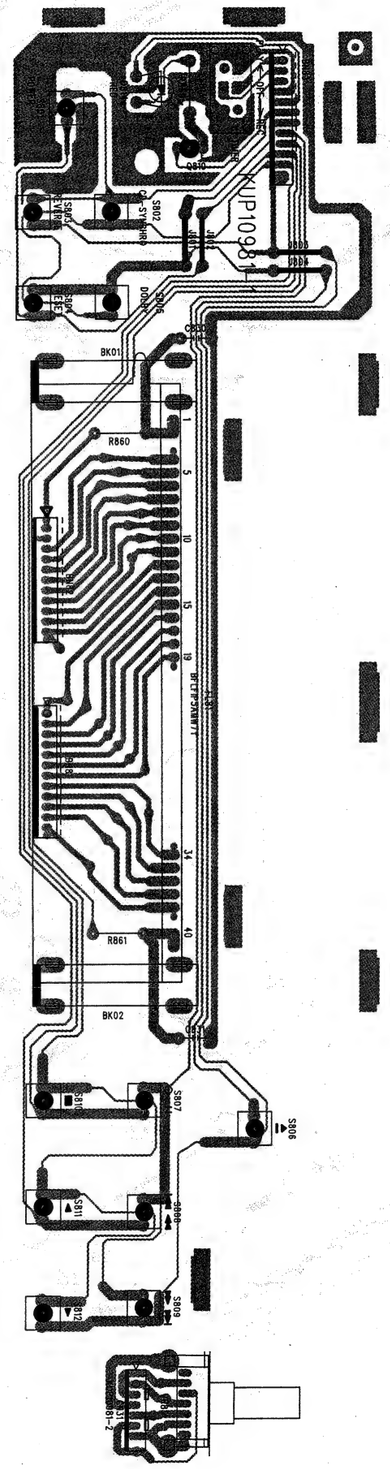
** THE UNIT OF RESISTANCE IS OHM (Ω)
K=1000 OHM, M=1000 KOHM

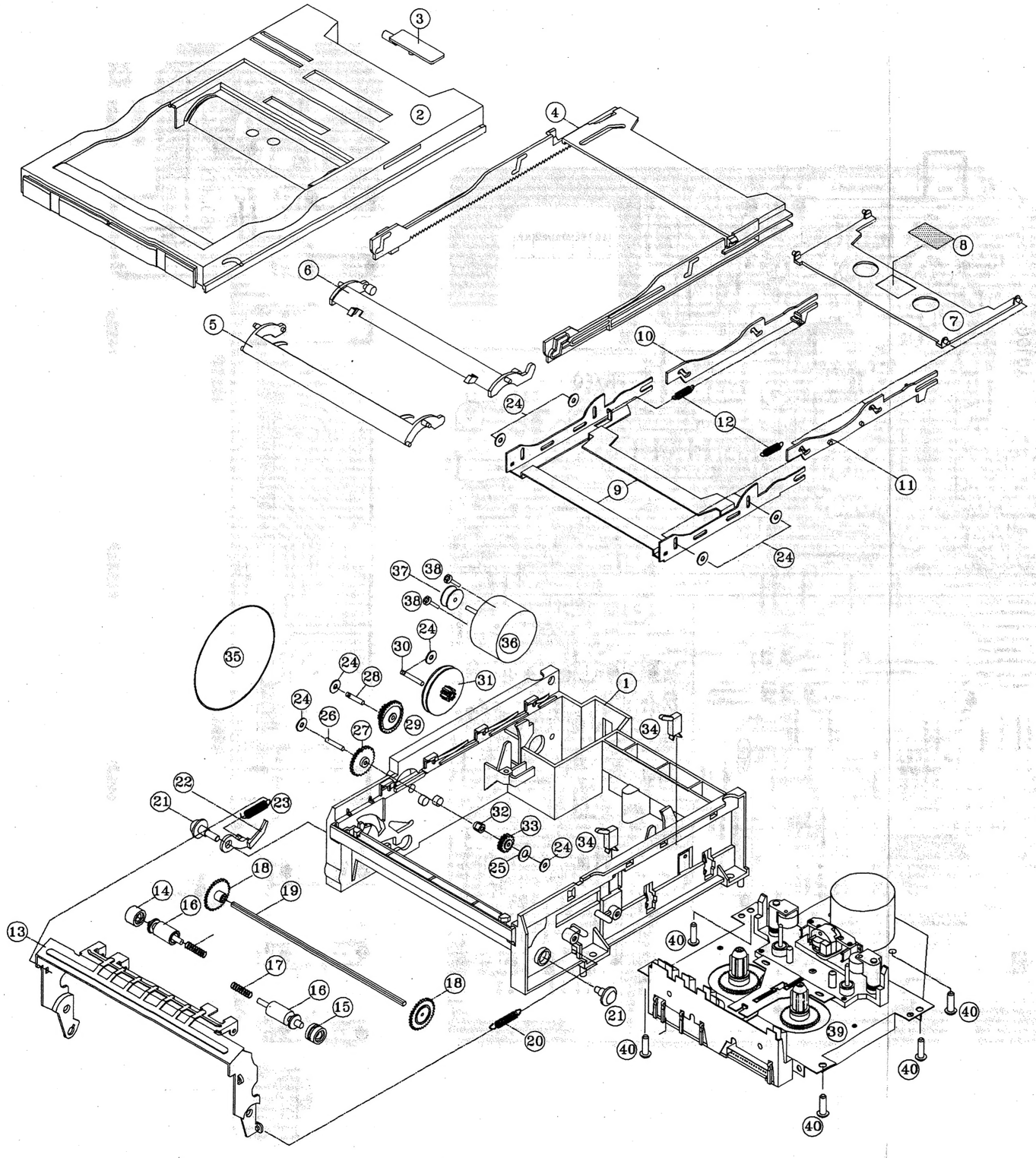
** THE UNIT OF CAPACITANCE IS MICROFARAD (uF).
P=10^-6 uF

** THIS SCHEMATIC DIAGRAM MAY BE MODIFIED AT ANY TIME WITH THE IMPROVEMENT OF PERFORMANCE.

PRINTED CIRCUIT BOARDS





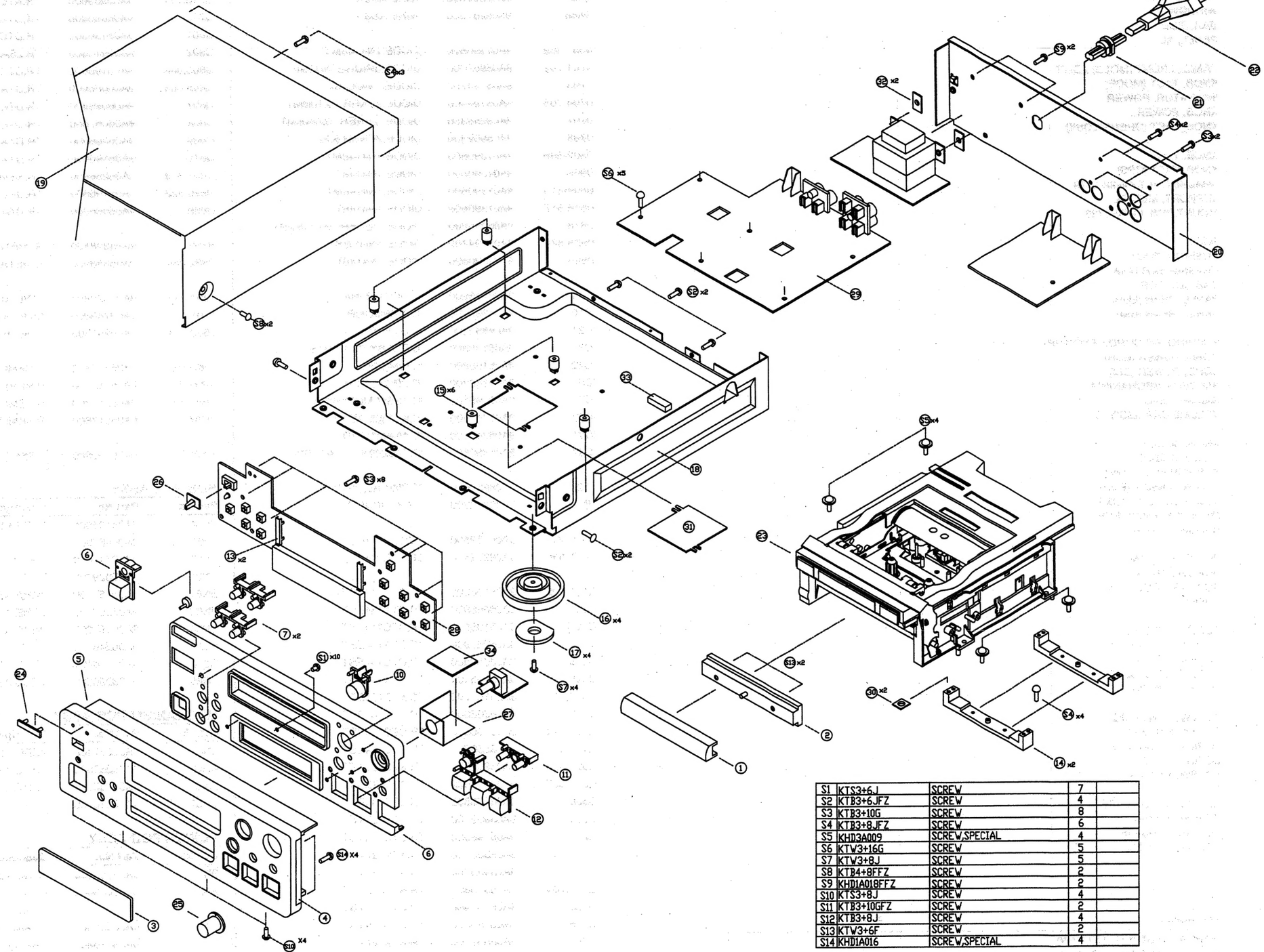


EXPLODED VIEW [DECK MECHANISM]

Ref. No.	Part No.	Description	Remarks
1	9A06248600	BASE	
2	9A065459-00	TRAY	
3	9A06252200	STOPPER	
4	9A06252000	TRANSFER	
5	9A06251900	LINKER, FRONT	
6	9A06251800	LINKER, REAR	
7	9A06252100	PLATTER, TAPE	
8	9A06249800	STICKER, TAPE	
9	9A06251700	PLATTER, LOADING	
10	9A06247600	TRAY, SUB(L)	
11	9A06247300	TRAY, SUB(R)	
12	9A062562-00	SPRING, TRAY	
13	9A06255500	ARM, PUSH	
14	9A06249900	ROLL, SILICONE(L)	
15	9A06250000	ROLL, SILICONE(R)	
16	9A06251300	HOLDER, BAR	
17	9A06256100	SPRING, COIL	
18	9A06248100	GEAR, TRAY	
19	9A06247700	SHAFT, BAR	
20	9A06256000	SPRING, PUSH ARM	
21	9A06249600	SCREW, SPECIAL	
22	9A06247400	LATCH	
23	9A06255900	SPRING, LINKER	
24	9A06253100	POLY, WASHER	
25	9A06253200	POLY, WASHER(L)	
26	9A062480-00	SHAFT, PIN	
27	9A062484-00	GEAR, IDLE (A)	
28	9A06247800	SHAFT, GEAR	
29	9A06248200	GEAR, IDLE (B)	
30	9A062479-00	SHAFT, GEAR	
31	9A06248900	GEAR, PULLEY	
32	9A06247500	BUSHING, SERRATION	
33	9A062483-00	GEAR, PINION	
34	9A05424300	SWITCH, LEAF (MLS-1)	
35	9A06249000	BELT	
36	9A06248700	MOTOR	
37	9A06248800	PULLEY, MOTOR	
38	9A062550-00	SCREW	
39	9A062504-00	DECK MECHANISM	
40	9A01420500	SCREW	

Ref. No.	Part No.	Description	Remarks
	9A06053800	MANUAL, INSTRUTION,JAPAN	
	9A06054200	MANUAL, INSTRUTION,MULTI	

EXPLODED VIEW



S1	KTS3+6J	SCREW	7	
S2	KTB3+6JFZ	SCREW	4	
S3	KTB3+10G	SCREW	8	
S4	KTB3+8JFZ	SCREW	6	
S5	KHD3A009	SCREW,SPECIAL	4	
S6	KTW3+16G	SCREW	5	
S7	KTW3+8J	SCREW	5	
S8	KTB4+8FFZ	SCREW	2	
S9	KHD1A018FFZ	SCREW	2	
S10	KTS3+8J	SCREW	4	
S11	KTB3+10GFZ	SCREW	2	
S12	KTB3+8J	SCREW	4	
S13	KTW3+6F	SCREW	2	
S14	KHD1A016	SCREW,SPECIAL	4	

EXPLODED VIEW [R-H500]

Ref. No.	Part No.	Description	Remarks
1	9A06249500	ORNAMENT, DOOR	
2	9A06249100	BASE, DOOR	
3	9A06249200	WINDOW	
4	9A06251600	BAR, SIDE	
5	9A06251500	PANEL, AL	
6	9A06314600	PANEL, FRONT (MOLD) AD-77	
7	9A06314200	KNOB, TACT (MODE)	
8	9A06227400	INDICATOR, POWER	
9	9A06314500	KNOB, POWER	
10	9A06314300	KNOB, TACT (OPEN/CLOSE)	
11	9A06239700	KNOB, TACT	
12	9A06314400	KNOB, TACT (CPS)	
13	9A05961600	BRACKET, FLT A4-92-1739	
14	9A06253000	SUPPORT, MECHA	
15	9A06229100	MOUNT,PCB A4-92-1728	
16	9A06315500	FOOT	
17	9A06229300	CUSHION, FOOT	
18	9A06255300	CHASSIS, BOTTOM	
19	9A06251100	CABINET, TOP	
20	9A06315400	PANEL, REAR [EUR]	
	9A062512-00	PANEL, REAR [DM]	
21	9A01376900	BUSHING, AC CORD HEYCO(SR-	
22	9A05328100	CORD, POWER [EUR]	
	9A06242000	CORD, POWER [DM]	
23	9A06250300	R/P DECK MECHANISM	
24	9A06224200	BADGE, TEAC	
25	9A06228400	VOLUME CAP ASS'Y (C)	
26	9A06314100	KNOB, SLIDE	
27	9A06252800	PLATE, SHIELD	
28	9A06253500	SUB PCB ASS'Y [DM]	
	9A06253510	SUB PCB ASS'Y [EUR]	
29	9A06253400	MAIN PCB ASS'Y [DM]	
	9A06253410	MAIN PCB ASS'Y [EUR]	
30	9A06229400	RUBBER, MECHA	
31	9A06255400	PLATE, BOTTOM	
32	9A06229500	RUBBER, TRANS	
33	9A06327100	SUPPORT, CUSHION	
34	9A065462-00	SHEET	
S1	9A06244200	SCREW, KTS3+6J	
S2	9A05338600	SCREW, KTB3+6JFZ	
S3	9A01377400	SCREW, KTB3+10G	
S4	9A01377200	SCREW, KTB3+8JFZ	
S5	9A06249700	SCREW, SPECIAL	
S6	9A06255100	SCREW, KTW3+16G	
S7	9A05339200	SCREW, KTW3+8J	
S8	9A06053100	SCREW, KTB4+8FFZ	
S9	9A06314900	SCREW, SPECIAL	
S10	9A01397400	SCREW, KTS3+8J	
S11	9A01377300	SCREW, KTB3+10GFZ	
S12	9A01535800	SCREW, KTB3+8J	
S13	9A06234700	SCREW, KTW3+6F	
S14	9A06229000	SCREW, SPECIAL	

INCLUDED ACCESSORIES

Ref. No.	Part No.	Description	Remarks
	9A06053800	MANUAL, INSTRUCTION [JPN]	
	9A06054200	MANUAL, INSTRUCTION [NUTE]	

ELECTRICAL PARTS LIST

MAIN PCB ASSY

Ref. No.	Part No.	Description
BN31	9A06256800	WIRE ASS'Y
BN88	9A06257500	WIRE ASS'Y
D351,352	9A01390500	DIODE,1N4148MT
D701,702	9A05987000	DIODE,BRIDGE W02GF
D703	9A05194700	DIODE,1N4003ST
D704,705	9A05194400	DIODE,ZENER UZ10BMT
D707	9A06256300	DIODE, ZENER UZ24BMT
D708	9A05902300	DIODE,ZENER,6.2Z
D802-806	9A01390500	DIODE,1N4148MT
D808	9A01390600	DIODE,1N4148T
D809-813	9A01390500	DIODE,1N4148MT
D816,817	9A01390600	DIODE,1N4148T
D818	9A06236200	DIODE, ZENER MTZJ6.2BT
D823,824	9A05194700	DIODE,1N4003ST
D825	9A01390600	DIODE,1N4148T
IC11	9A03746200	IC,UPC1330HA
IC12	9A01389700	IC,BVIM5220P
IC21	9A04882200	IC,LA2000
IC31	9A05198900	IC,DOLBY CXA1331S
IC32	9A05195800	IC,KA4558S
IC51	9A06246300	IC,UPC1297CA
IC71	9A05196100	IC,ASS'Y MC7812VA
IC72	9A05341500	IC,KA7805-ABTU
IC81	9A06246200	IC,ANAM1173D
IC84	9A05880800	IC,BA6209N MC-D200
JB21	9A06250500	TERMINAL, IN/OUT
JB22	9A06242200	JACK, BOARD
L401,402	9A06252500	COIL, (5.4mH)
L403,404	9A06252400	COIL, (11mH)
Q101,102	9A05196500	TR,DTC114YST
Q301	9A06066900	TR,DTA144EST
Q302	9A05196500	TR,DTC114YST
Q303	9A06066900	TR,DTA144EST
Q308	9A06066800	TR,DTC144EST
Q309	9A05196400	TR,DTA114YST
Q310,311	9A05197500	TR,KTD1302T
Q403-406	9A06066800	TR,DTC144EST
Q411,412	9A05196500	TR,DTC114YST
Q414,416	9A06066800	TR,DTC144EST
Q501-503	9A05939600	TR,KTC3227YT
Q504-507	9A05911600	TR,2SA933SRT
Q508	9A06066800	TR,DTC144EST
Q509	9A05939700	TR,KTA1274YT
Q510	9A05196500	TR,DTC114YST
Q511,701	9A05939700	TR,KTA1274YT
Q702	9A05939700	TR,KTA1274YT
Q703,704	9A05939600	TR,KTC3227YT
Q705	9A05196400	TR,DTA114YST
Q706	9A05196500	TR,DTC114YST
Q707	9A05939700	TR,KTA1274YT
Q709	9A05196400	TR,DTA114YST

MAIN PCB ASSY

Ref. No.	Part No.	Description
Q710,711	9A05939600	TR,KTC3227YT
Q712	9A06066800	TR,DTC144EST
Q801	9A05196500	TR,DTC114YST
Q802	9A05911600	TR,2SA933SR
Q803,804	9A05196500	TR,DTC114YST
Q805,806	9A06066900	TR,DTA144EST
Q807	9A06066800	TR,DTC144EST
Q808	9A06067000	TR,DTC144TST
Q809	9A06066900	TR,DTA144EST
Q810	9A05196400	TR,DTA114YST
Q817,818	9A06256400	TR,KSA928AYT
Q820,822	9A05196500	TR,DTC114YST
Q829	9A06066900	TR,DTA144EST
R702	9A05338100	R, METAL OXIDE FILM 1W 22
R832,834	9A05338000	R,METAL OXIDE FILM 1W 10
T301,302	9A01422800	COIL, MPX
T501	9A03746600	COIL, BIAS SM10F
T502,503	9A06252300	COIL, HX PRO 126AN-K5 18
VR01,02	9A05317400	R,SEMI FIXED EVNDJAA03B14
VR31,32	9A05317400	R,SEMI FIXED EVNDJAA03B14
VR51,52	9A05317400	R,SEMI FIXED EVNDJAA03B14
VR84	9A05317600	R,SEMI FIXED EVNDJAA03B23
X 801	9A05192900	CRYSTAL

SUB PCB ASSY

Ref. No.	Part No.	Description
D814	9A05195000	LED,RED SLR342VCF02
S801-812	9A04882500	SW,TACT SKHV10910A
S813	9A03748000	SW. JC-75
CN31	9A05329700	WAFER MOLEX53014-0610
BN81	9A06257100	WIRE ASS'Y
BN82	9A06257200	WIRE ASS'Y
BN83	9A06257300	WIRE ASS'Y
FL81	9A06246100	F.I.P
Q810	9A05196400	TR, DTA114YST
VR85	9A06256500	VOLUME,ROTARY

MECHANISM PCB ASSY

Ref. No.	Part No.	Description
BN84	9A06257400	WIRE ASS'Y
RH02	9A06257600	WIRE ASS'Y
JW87	9A06256700	WIRE ASS'Y
CN87	9A06250700	WAFER

POWER PCB ASSY

Ref. No.	Part No.	Description
BN71	9A06257000	WIRE ASS'Y
F701	9A06239400	FUSE 2C0630TLE [DM]
		FUSE 2C0315TLE [EUR]
T701	9A06252600	TRANS, POWER [DM]
	9A06315800	TRANS, POWER [EUR]

REC PCB ASSY

Ref. No.	Part No.	Description
BN41	9A06256900	WIRE ASS'Y
IC41	9A05195800	IC,KA4558S
CN41	9A06250900	WAFER MOLEX53014-1310
	9A06053800	OWNERS MNL,R-H500 JAPAN
	9A06054200	OWNERS MNL,R-H500 MULTI